EDITORIAL

Adductor Canal Block for Knee Surgeries: An Emerging Analgesic Technique

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For years, femoral nerve block (FNB) has been considered as the main peripheral nerve block for postoperative analgesia following knee surgery. However, quadriceps weakness as the major downside of FNB led to searching for alternative nerve blocks. In recent years, adductor canal block (ACB) has been introduced as a pure sensory nerve block for postoperative analgesia following knee surgery (1). The rationale behind the ACB is that saphenous nerve (sensory nerve) and part of the obturator nerve traveling through the adductor canal of thigh and injecting local anesthetics in the canal will provide adequate analgesia by blocking these nerves (2).

There are growing literature regarding efficacy of ACB and available evidence indicating ACB is as effective as FNB in providing postoperative analgesia after knee surgery (3-5). In addition, ACB carries the advantage of preserving or minimally affecting quadriceps strength (3-5). Preserving quadriceps strength will facilitate ambulation and postoperative rehabilitation.

ACB technique is relatively easy and is performed under ultrasound guidance. Kirkpatrick and colleagues have previously described the technique in details (6). Briefly the ultrasound transducer is placed transversely on the medial thigh, at the midpoint between the inguinal crease and the medial condyle of femur to visualize femoral artery that is located deep to the sartorius muscle. Under ultrasound guidance, the needle tip is positioned anterolateral to the artery and slightly deep to the posterior fascia of the sartorius muscle and local anesthetic is injected. Intravascular injection, failed nerve block, systemic toxicity of local anesthetics, nerve injury, infection and allergic reaction to local anesthetics are some of the potential complications of ACB. In the case of failed block, if maximum dose of local anesthetics has not yet injected, the block can be repeated.

It seems that single shot of ACB provides pain relief comparable to femoral nerve catheter and facilitate discharge of patients after total knee arthroplasty (7). In a small randomized controlled trial, Sztain et al showed that there is not a statistically significant difference between continues ACB and continues FNB regarding median number of hours to overall discharge readiness following unicompartment knee arthroplasty however, ACB was associated with a lower number of discrete days until discharge readiness (8). Machi et al also found that continuous ACB compared to continuous FNB decreases the time until adequate mobilization but not overall time to discharge readiness (9). Decision about perfroming continuous ACB is basically based on the anesthesiologist's judgment, required duration of analgesia and the use of adjunct pain medications.

Regarding amount of local anesthetic injection, a recent study by Jæger et al showed that injecting 10 to 30 cc of 0.1% ropivacaine provides adequate pain relief while does not cause motor weakness (10). However, lower dose of 0.2% ropivaciane has also been used for ACB with satisfactory results.

In conclusion, ACB is an emerging technique for postoperative analgesia following knee surgery and is as effective as FNB in postoperative pain control. The main advantage of ACB is preserving or minimal reduction in quadriceps strength that facilitates ambulating and rehabilitation after knee surgery. The technique is becoming more popular among anesthesiologists however, it seems that use of ACB is still limited to high volume orthopedic centers where trained anesthesiologists in regional anesthesia are available.

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